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| 09/925,312  | 08/10/2001  | Jan R. Westra        | 1875.1630000/RES/JTH | 4768             |
| 28393   | 7590        | 05/20/2005           | EXAMINER             |                  |
| STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.<br>1100 NEW YORK AVE., N.W.<br>WASHINGTON, DC 20005 |             |                      | ELAHEE, MD S         |                  |
|   |             |                      | ART UNIT             | PAPER NUMBER     |
|   |             |                      | 2645                 |                  |

DATE MAILED: 05/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/925,312

Applicant(s)

WESTRA ET AL.

Examiner

Md S. Elahee

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2645

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 06 December 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-5, 7-18, 20-23 and 25-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 9-12, 21, 25-28 and 30 is/are allowed.
- 6) ☒ Claim(s) 1-5, 7, 8, 13, 14-18, 20, 22, 23 and 29 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Response to Amendment***

1. This action is responsive to an amendment filed 12/06/04. Claims 1-5, 7-18, 20-23 and 25-30 are pending. Claims 6, 19 and 24 have been cancelled.

### ***Response to Arguments***

2. Applicant's arguments with respect to claims 1, 14, 20 and 29 have been considered but are moot in view of the new ground(s) of rejection which is deemed appropriate to address all of the added limitation at this time.

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claim 20 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Regarding claim 20, the citation 'a gain of said programmable gain stage is tunable in logarithmic steps' is not disclosed in the original specification.

### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

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having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1, 2, 22 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kondo et al. (U.S. Patent No. 4,246,582) in view of Styryna (U.S. Patent No. 4,527,014).

Regarding claim 1, Kondo teaches a hybrid coil (i.e., circuit) having a first port (see fig. 1, connection between item 18 and item 16) that is connectable to a transmission medium, a second port (see fig. 1, connection between item 16 and item 12) that is connectable to a transmit source, and a third port (see fig. 1, connection between item 16 and item 21) (fig. 1; col. 2, lines 53-67, col. 3, lines 1-20).

However, Kondo does not specifically teach "said hybrid circuit including a series resistance connected between said first port of said hybrid and said third port of said hybrid". Styryna teaches that the hybrid circuit including a series resistance 39 connected between the first port of the hybrid and the third port of the hybrid (fig. 3; col. 6, lines 52-54, col. 8, lines 21-24). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kondo to incorporate the hybrid circuit including a series resistance connected between the first port of the hybrid and the third port of the hybrid as taught by Styryna. The motivation for the modification is to have doing so in order to pass a portion of a speech signal.

Kondo further teaches a high-pass filter, having an input that is directly connected to the third port of the hybrid coil (fig. 1; col. 3, lines 3-20).

Kondo further teaches an AGC (i.e., gain stage) 24, having an input that is connected to an output of the high-pass filter (fig. 1; col. 3, lines 3-20).

Regarding claim 2, Kondo teaches that the gain stage is directly connected to the output of the high-pass filter (fig. 1; col. 3, lines 3-20).

Regarding claim 22, Kondo teaches that the hybrid circuit, the high-pass filter, and the gain stage are inherently passive (fig.1).

Regarding claim 23, Kondo teaches that the third port of the hybrid circuit is substantially isolated from the transmit source, despite variations in an input impedance of the high pass filter (fig.1; col.3, lines 3-20).

7. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kondo et al. (U.S. Patent No. 4,246,582) in view of Styra (U.S. Patent No. 4,527,014) further in view of Kakuishi et al. (U.S. Patent No. 5,367,540).

Regarding claim 3, Kondo in view of Styra does not specifically teach “a replica circuit that replicates a transmit signal generated from said transmit source to produce a replica transmit signal that substantially cancels said transmit signal at said third port of said hybrid”. Kakuishi teaches an echo-canceler (i.e., replica circuit) that replicates a transmit signal generated from the transmit source to produce a replica transmit signal that substantially cancels the transmit signal at the third port of the hybrid (fig.12; col.10, lines 45-65). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kondo in view of Styra to incorporate a replica circuit that replicates a transmit signal generated from the transmit source to produce a replica transmit signal that substantially cancels the transmit signal at the third port of the hybrid as taught by Kakuishi. The motivation for the modification is to have doing so in order to remove the loop back component from the transmission signal.

8. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kondo et al. (U.S. Patent No. 4,246,582) in view of Styra (U.S. Patent No. 4,527,014) further in view of Kakuishi

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et al. (U.S. Patent No. 5,367,540) and further in view of Matsuyoshi et al. (U.S. Patent No. 6,720,829).

Regarding claim 4, Kondo in view of Styrna further in view of Kakuishi does not specifically teach "said replica transmit signal is substantially 180 degrees out of phase with said transmit signal". Matsuyoshi teaches that the replica transmit signal is substantially 180 degrees out of phase with the transmit signal (abstract; col.3, lines 15-30). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kondo in view of Styrna further in view of Kakuishi to incorporate the replica transmit signal being substantially 180 degrees out of phase with the transmit signal as taught by Matsuyoshi. The motivation for the modification is to have doing so in order to obtain a maximum suppression.

9. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kondo et al. (U.S. Patent No. 4,246,582) in view of Styrna (U.S. Patent No. 4,527,014) further in view of Kakuishi et al. (U.S. Patent No. 5,367,540) and further in view of Umemoto et al. (U.S. Patent No. 5,379,338).

Regarding claim 5, Kondo in view of Styrna further in view of Kakuishi does not specifically teach "a digital-to-analog converter (DAC) that receives transmit data and generates said replica transmit signal". Umemoto teaches a digital-to-analog converter (DAC) that receives transmit data and generates the replica transmit signal (fig.2; col.9, lines 1-20). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kondo in view of Styrna further in view of Kakuishi to incorporate a digital-to-analog converter (DAC) that receives transmit data and generates the replica transmit signal as taught by

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Umemoto. The motivation for the modification is to have doing so in order to convert the data into analog speech signal.

10. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kondo et al. (U.S. Patent No. 4,246,582) in view of Styrna (U.S. Patent No. 4,527,014) further in view of Nakase (U.S. Patent No. 5,231,408).

Regarding claim 13, Kondo in view of Styrna does not specifically teach “said high-pass filter has a tunable corner frequency”. Nakase teaches that the high-pass filter has a tunable corner frequency (col.3, lines 13-19). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kondo in view of Styrna to incorporate the high-pass filter having a tunable corner frequency as taught by Nakase. The motivation for the modification is to have doing so in order to obtain a stable tuning characteristic without getting any influence from the AM circuit.

11. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kondo et al. (U.S. Patent No. 4,246,582) in view of Styrna (U.S. Patent No. 4,527,014) further in view of Sawada et al. (Japanese Pub. No. 05-121907).

Regarding claim 18, Kondo in view of Styrna does not specifically teach “said gain stage has a constant input impedance”. Sawada teaches that the gain stage has a constant input impedance (abstract; paragraph 0005, 0007). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kondo in view of Styrna to incorporate the gain stage having a constant input impedance as taught by Sawada. The motivation for the modification is to have doing so in order to obtain an outstanding gain control circuit.

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12. Claims 14 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kondo et al. (U.S. Patent No. 4,246,582) in view of Klayman et al. (U.S. Pub. No. 2004/0247132).

Regarding claim 14 is rejected for the same reasons as discussed above with respect to claim 1. Furthermore, Kondo does not specifically teach “said high-pass filter has a tunable corner frequency”. Klayman teaches that the high-pass filter has a tunable corner frequency (fig.9; page 14, paragraph 0151). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kondo to incorporate the high-pass filter having a tunable corner frequency as taught by Klayman. The motivation for the modification is to have doing so in order to cut low frequency signal.

Kondo does not specifically teach “said high-pass filter includes a variable resistance that determines said tunable corner frequency”. Klayman teaches that the high-pass filter includes a variable resistance that determines tunable corner frequency (fig.9; page 14, paragraph 0151). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kondo to incorporate the high-pass filter including a variable resistance that determines tunable corner frequency as taught by Klayman. The motivation for the modification is to have doing so in order to tune corner frequency at a desired value.

Regarding claim 29 is rejected for the same reasons as discussed above with respect to claim 1. Furthermore, Kondo does not specifically teach a hybrid circuit, a high-pass filter, and a gain stage are differential.

The examiner notes that a differential hybrid circuit, a differential high-pass filter, and a differential gain stage are well known in the art.



It would have been obvious to one skilled in the art at the time of the invention to modify Kondo, such that a hybrid circuit, a high-pass filter, and a gain stage being differential are used to provide connections to the different ports of the differential hybrid circuit with a differential high-pass filter, and a differential gain stage as is known in the art.

However, Kondo does not specifically teach “a series capacitor and a variable resistance connected in-series with said series capacitor, wherein a corner frequency of said high-pass filter is tuned by adjusting said variable resistance”. Klayman teaches a series capacitor and a variable resistance connected in-series with the series capacitor, wherein a corner frequency of the high-pass filter is tuned by adjusting the variable resistance (fig.9; page 14, paragraph 0151). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kondo to incorporate a series capacitor and a variable resistance connected in-series with the series capacitor, wherein a corner frequency of the high-pass filter is tuned by adjusting the variable resistance as taught by Klayman. The motivation for the modification is to have doing so in order to change a corner frequency to a desired value by changing the value of a resistor.

13. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kondo et al. (U.S. Patent No. 4,246,582) in view of Klayman et al. (U.S. Pub. No. 2004/0247132) further in view of Behzard (U.S. Pub. No. 2004/0160272).

Regarding claim 15, Kondo teaches that a HPF inherently has a resistor (i.e., first resistor) (fig.1).

However, Kondo in view of Klayman does not specifically teach “a second resistor that is series-connected with a switch, said second resistor and said switch connected in parallel with said first resistor, said tunable corner frequency adjusted by closing said switch”. Behzard

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teaches a second resistor that is series-connected with a switch, the second resistor and the switch connected in parallel with the first resistor, the tunable corner frequency adjusted by closing the switch (fig.17; page 5, paragraph 0071). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kondo in view of Klayman to incorporate a second resistor that is series-connected with a switch, the second resistor and the switch connected in parallel with the first resistor, the tunable corner frequency adjusted by closing the switch as taught by Behzard. The motivation for the modification is to have doing so in order to change a corner frequency by turning a switch to a desired value.

14. Claims 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kondo et al. (U.S. Patent No. 4,246,582) in view of Styrna (U.S. Patent No. 4,527,014).

Regarding claims 16 and 17, Kondo does not specifically teach a hybrid circuit, a high-pass filter, and a gain stage are differential.

The examiner notes that a differential hybrid circuit, a differential high-pass filter, and a differential gain stage are well known in the art.

It would have been obvious to one skilled in the art at the time of the invention to modify Kondo, such that a hybrid circuit, a high-pass filter, and a gain stage being differential are used to provide connections to the different ports of the differential hybrid circuit with a differential high-pass filter, and a differential gain stage as is known in the art.

15. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kondo et al. (U.S. Patent No. 4,246,582) in view of Chan (U.S. Patent No. 6,744,831) further in view of Klayman et al. (U.S. Pub. No. 2004/0247132).

Regarding claim 20, Kondo does not specifically teach "said gain stage is a programmable gain stage". Chan teaches that the gain stage is a programmable gain stage (col.5, lines 11-20). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kondo to incorporate the gain stage being a programmable gain stage as taught by Chan. The motivation for the modification is to have doing so in order to provide a preconditioned received analog signal.

However, Kondo in view of Chan does not specifically teach that a gain is tunable in logarithmic steps according to a control signal. Klayman teaches that a gain is tunable in logarithmic steps according to a control signal (fig.7; page 11, paragraph 0128). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kondo in view of Chan to incorporate a gain being tunable in logarithmic steps according to a control signal as taught by Klayman. The motivation for the modification is to have doing so in order to provide display characteristics of different gains based on corresponding signals.

#### *Reasons for Allowance*

16. Claims 9-12, 21, 25-28 and 30 are allowed.

The following is a statement of reasons for the indication of allowable subject matter:

Regarding claims 9 and 26, the prior art Kondo, after having all the limitations of the claims, fails to teach a first digital-to-analog converter (DAC) adapted to receive digital transmit data from the transmit source and having an analog output connected to the first port of the hybrid circuit wherein the hybrid circuit comprises a second digital-to-analog converter (DAC)

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adapted to receive the digital transmit data from the transmit source and having an analog output connected to the third port of the hybrid circuit.

Regarding claims 21 and 30, the prior art Kondo, after having all the limitations of the claims, fails to teach a programmable gain stage comprising a resistor ladder having multiple taps, each tap having a corresponding switch connected to an output of the programmable gain stage and one or more parallel resistors connected from the resistor ladder to a virtual ground.

***Conclusion***

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Md S. Elahee whose telephone number is (571) 272-7536. The examiner can normally be reached on Mon to Fri from 8:30am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Fan Tsang can be reached on (571) 272-7547. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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May 9, 2005

  
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